Pond Discharge Notification Coversheet
Date: 7/2/07
Total pages including coversheet = (34)

To:

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David Abelson	**RFSC**	**dabelson@rockyflatssc.org**

From: George Squibb, Rocky Flats Surface Water Lead, Telephone (303) 994-0145

Re: Discharge notification for Rocky Flats Ponds A-4 and B-5.

Initial pre-discharge samples for Ponds A-4 and B-5 were collected on 5/4/07. Nitrate samples arrived at the lab above temperature limits due to FedEx shipping delays; nitrate was re-sampled on 5/14/07. Initial uranium results showed unacceptable discrepancies between Site and CDPHE split samples; uranium was re-sampled on 6/7/07. All results indicate that water quality is acceptable for discharge. Discharge of Ponds A-4 and B-5 is scheduled to begin on 7/5/07 at 9:00 am.

Pond A-4 will be direct discharged using the outlet works to North Walnut Creek through Point of Compliance (POC) GS11. The discharge is expected to continue through approximately 7/26/07, with a total discharge volume of approximately 13.1 MG.

Pond B-5 will be direct discharged using the outlet works to South Walnut Creek through POC GS08. The discharge is expected to continue through approximately 7/12/07, with a discharge volume of approximately 3.2 MG.

All available analytical data accompany this notice, and all data show the water quality meets applicable surface-water standards.

Please contact me if you have questions.

PRELIMINARY RESULTS REPORT
RIN: 07050877
Site: Rocky Flats Surface Water
Location: A4 POND
Ticket Number: NFP 544
Report Date: 5/23/2007

Parameter	Units	Date Sampled	Date Analyzed	Result	Qualifier(s)	Uncertainty	Detection Limit	Method
Americium-241	pCi/L	05/04/2007	05/17/2007	-0.0207	U	0.029	0.0918	Am-05-RC Modified
Plutonium-238	pCi/L	05/04/2007	05/17/2007	-0.00259	U	0.00906	0.0189	Pu-11-RC Modified
Plutonium-239/240	pCi/L	05/04/2007	05/17/2007	-0.00938	U	0.0113	0.0222	Pu-11-RC Modified

PRELIMINARY RESULTS REPORT
RIN: 07050877
Site: Rocky Flats Surface Water
Location: B5 POND
Ticket Number: NFP 545
Report Date: 5/23/2007

Parameter	Units	Date Sampled	Date Analyzed	Result	Qualifier(s)	Uncertainty	Detection Limit	Method
Americium-241	pCi/L	05/04/2007	05/17/2007	0.00364	U	0.0152	0.0594	Am-05-RC Modified
Plutonium-238	pCi/L	05/04/2007	05/18/2007	-0.0048	U	0.0083	0.0237	Pu-11-RC Modified
Plutonium-239/240	pCi/L	05/04/2007	05/18/2007	0.0032	U	0.00768	0.0277	Pu-11-RC Modified

S.M. Stoller Corporation

Client Sample ID: A4 POND

TOTAL Metals

Lot-Sample #...: D7F070412-001 **Matrix.....:** WATER
Date Sampled...: 06/07/07 14:15 **Date Received..:** 06/07/07

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 7158593						
Uranium	**5.2**	**0.20**	**ug/L**	**SW846 6020**	**06/08-06/12/07**	**J0JXN1AA**
		Dilution Factor: 2		Analysis Time..: 09:18	MDL.....: 0.040	

Conversion:

5.2 ug/L is approximately 3.57 pCi/L

S.M. Stoller Corporation

Client Sample ID: B5 POND

TOTAL Metals

Lot-Sample #...: D7F070412-002 **Matrix.....:** WATER
Date Sampled...: 06/07/07 14:30 **Date Received..:** 06/07/07

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 7158593						
Uranium	**7.8**	**0.20**	**ug/L**	**SW846 6020**	**06/08-06/12/07**	**J0JXQ1AA**
		Dilution Factor: 2		Analysis Time..: 09:36	MDL.....: 0.040	

Conversion:

7.8 ug/L is approximately 5.35 pCi/L

S.M. Stoller Corporation

Client Sample ID: A4 POND

General Chemistry

Lot-Sample #...: D7E140158-001 **Work Order #...:** JWXME **Matrix.....:** WATER
Date Sampled...: 05/14/07 12:00 **Date Received..:** 05/14/07

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Nitrate-Nitrite	**3.1**	**0.050**	**mg/L**	**MCAWW 353.2**	**05/15/07**	**7136172**

Dilution Factor: 1 Analysis Time..: 09:00 MDL.....: 0.019

S.M. Stoller Corporation

Client Sample ID: B5 POND

General Chemistry

Lot-Sample #...: D7E140158-002 **Work Order #...:** JWXMH **Matrix.....:** WATER
Date Sampled...: 05/14/07 12:30 **Date Received..:** 05/14/07

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Nitrate-Nitrite	ND	0.050	mg/L	MCAWW 353.2	05/15/07	7136172

Dilution Factor: 1 Analysis Time..: 09:00 MDL.....: 0.019

NOTE(S):

RL Reporting Limit

ND: The analyte was analyzed for, but not detected.

Colorado Department of Public Health and Environment

Laboratory Services Division
8100 Lowry Boulevard, Denver CO 80230-6928
US Mail: PO Box 17123, Denver CO 80217
(303) 692-3090 fax (303) 344-9989

LAB ID: **INO-2007001681**

SAMPLE SITE

CARL SPRENG CDPHE

ROCKY FLATS POND A4 DAM FACE

SAMPLE INFORMATION

Collected 5/4/2007 10:00:00AM
Received 5/4/2007 11:31:00AM
Reported 5/29/2007
Collected By CS
Matrix Drinking Water

CUSTOMER

Customer Name CDPHE - HMWMD - Rocky Flats Unit
Customer Address 4300 Cherry Creek Drive South
City/State/Zip Denver CO 80246
Contact Name CARL SPRENG
Contact Phone

COMMENTS

Test Name	Result	Units	Method Name	Date Analyzed	MCL	MDA	Qualifier
Gross Alpha	<7	pCi/L	EPA 900.0	05/17/2007	NA	7	
Gross Beta	15 +/- 5	pCi/L	EPA 900.0	05/17/2007	NA	8	
Americium-241	< 0.013	pCi/L	ASTM 3084-89	05/25/2007	NA	0.013	**Q**
Plutonium-239+240	< 0.011	pCi/L	ASTM 3084-89	05/25/2007	NA	0.011	
Uranium-234					NA		
Uranium-235					NA		
Uranium-238					NA		

Lab Comments:

PRELIMINARY RESULTS. Q qualifier due to positive amercium
batch blank (0.014 +/- 0.008 pCi/l).

MDL - The lowest concentration of a substance in a sample that can be measured with a known level of confidence
MCL - Maximum Contaminant Level - The highest level of a contaminant that is allowed in drinking water < - less than MDL
mg/L - milligram per liter (ppm)
ug/L - microgram per liter (ppb)

LSD Interent Address: http://www.cdphe.state.co.us/lr/lrhom.htm

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LAB ID: **INO-2007001680**

SAMPLE SITE

CARL SPRENG CDPHE

ROCKY FLATS POND B5 DAM FACE

SAMPLE INFORMATION

Collected 5/4/2007 9:45:00AM
Received 5/4/2007 11:31:00AM
Reported 5/29/2007
Collected By CS
Matrix Drinking Water

CUSTOMER

Customer Name CDPHE - HMWMD - Rocky Flats Unit
Customer Address 4300 Cherry Creek Drive South
City/State/Zip Denver CO 80246
Contact Name CARL SPRENG
Contact Phone

COMMENTS

Test Name	Result	Units	Method Name	Date Analyzed	MCL	MDA	Qualifier
Gross Alpha	<5	pCi/L	EPA 900.0	05/17/2007	NA	5	
Gross Beta	16 +/- 5	pCi/L	EPA 900.0	05/17/2007	NA	9	
Americium-241	< 0.012	pCi/L	ASTM 3084-89	05/25/2007	NA	0.012	**Q**
Plutonium-239+240	0.015 +/- 0.007	pCi/L	ASTM 3084-89	05/25/2007	NA	0.008	
Uranium-234					NA		
Uranium-235					NA		
Uranium-238					NA		

Lab Comments:

PRELIMINARY RESULTS. Q qualifier due to positive amercium
batch blank (0.014 +/- 0.008 pCi/l).

MDL - The lowest concentration of a substance in a sample that can be measured with a known level of confidence
MCL - Maximum Contaminant Level - The highest level of a contaminant that is allowed in drinking water < - less than MDL
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LSD Interent Address: http://www.cdphe.state.co.us/lr/lrhom.htm

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LAB ID: INO-2007002167-001-A

SAMPLE SITE

ROCKY FLATS SITE

POND A-4 DAM FACE

SAMPLE INFORMATION

Collected 6/7/2007 3:00:00PM
Received 6/8/2007 11:11:00AM
Reported 6/20/2007
Collected By AC
Matrix Drinking Water
Water Temp
Residual Chlorine
Field Fluoride

CUSTOMER

CDPHE - HMWMD - Rocky Flats Unit
4300 Cherry Creek Drive South

Denver CO 80246

Contact Name CARL SPRENG
Contact Phone 3036923358

COMMENTS

PRE - DISCHARGE SAMPLING (INO RF1 & RAD RF1)
RUSH

Test Name	Result	Units	Method Name	Date Analyzed	MCL	PQL	Qualifier
Uranium, Total	0.004	mg/L	EPA 200.8	06/12/2007	0.030	0.001	

Lab Comments:

Conversion:

0.004 mg/L is approximately 2.74 pCi/L

PQL - The lowest concentration of a substance in a sample that can be measured with a known level of confidence
MCL - Maximum Contaminant Level - The highest level of a contaminant that is allowed in drinking water
< - less than MDL

mg/L - milligram per liter (ppm)
ug/L - microgram per liter (ppb)

LSD Interent Address: http://www.cdphe.state.co.us/lr/lrhom.htm

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LAB ID: INO-2007002166-001-A

SAMPLE SITE

ROCKY FLATS SITE

POND B-5 DAMFACE

SAMPLE INFORMATION

Collected 6/7/2007 2:45:00PM
Received 6/8/2007 11:11:00AM
Reported 6/20/2007
Collected By AC
Matrix Drinking Water
Water Temp
Residual Chlorine
Field Fluoride

CUSTOMER

CDPHE - HMWMD - Rocky Flats Unit
4300 Cherry Creek Drive South

Denver CO 80246

Contact Name CARL SPRENG
Contact Phone 3036923358

COMMENTS

PRE - DISCHARGE SAMPLING (INO RF1 & RAD RF1)
RUSH

Test Name	Result	Units	Method Name	Date Analyzed	MCL	PQL	Qualifier
Uranium, Total	0.005	mg/L	EPA 200.8	06/12/2007	0.030	0.001	

Lab Comments:

Conversion:

0.005 mg/L is approximately 3.43 pCi/L

PQL - The lowest concentration of a substance in a sample that can be measured with a known level of confidence
MCL - Maximum Contaminant Level - The highest level of a contaminant that is allowed in drinking water
< - less than MDL

mg/L - milligram per liter (ppm)
ug/L - microgram per liter (ppb)

LSD Interent Address: http://www.cdphe.state.co.us/lr/lrhom.htm

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LAB ID: INO-2007001681-001-A

SAMPLE SITE

CARL SPRENG CDPHE

ROCKY FLATS POND A4 DAM FACE

SAMPLE INFORMATION

Collected 5/4/2007 10:00:00AM
Received 5/4/2007 11:31:00AM
Reported 5/29/2007
Collected By CS
Matrix Drinking Water
Water Temp
Residual Chlorine
Field Fluoride

CUSTOMER

CDPHE - HMWMD - Rocky Flats Unit
4300 Cherry Creek Drive South

Denver CO 80246

Contact Name CARL SPRENG
Contact Phone

COMMENTS

Test Name	Result	Units	Method Name	Date Analyzed	MCL	PQL	Qualifier
Nitrate-N	4.3	mg/L	EPA 300.1	05/04/2007	10	0.3	

Lab Comments:

PQL - The lowest concentration of a substance in a sample that can be measured with a known level of confidence
MCL - Maximum Contaminant Level - The highest level of a contaminant that is allowed in drinking water
< - less than MDL
mg/L - milligram per liter (ppm)
ug/L - microgram per liter (ppb)

LSD Interent Address: http://www.cdphe.state.co.us/lr/lrhom.htm

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LAB ID: INO-2007001680-001-A

SAMPLE SITE

CARL SPRENG CDPHE

ROCKY FLATS POND B5 DAM FACE

SAMPLE INFORMATION

Collected 5/4/2007 9:45:00AM
Received 5/4/2007 11:31:00AM
Reported 5/29/2007
Collected By CS
Matrix Drinking Water
Water Temp
Residual Chlorine
Field Fluoride

CUSTOMER

CDPHE - HMWMD - Rocky Flats Unit
4300 Cherry Creek Drive South

Denver CO 80246

Contact Name CARL SPRENG
Contact Phone

COMMENTS

Test Name	Result	Units	Method Name	Date Analyzed	MCL	PQL	Qualifier
Nitrate-N	<0.3	mg/L	EPA 300.1	05/04/2007	10	0.3	

Lab Comments:

PQL - The lowest concentration of a substance in a sample that can be measured with a known level of confidence
MCL - Maximum Contaminant Level - The highest level of a contaminant that is allowed in drinking water
< - less than MDL
mg/L - milligram per liter (ppm)
ug/L - microgram per liter (ppb)

LSD Interent Address: http://www.cdphe.state.co.us/lr/lrhom.htm

Stoller
Legacy Management Team
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Data Review and Validation Report

General Information

Report Number (RIN):	07050877
Sample Event:	May 4, 2007
Site(s):	Rocky Flats, Colorado; Surface Water
Laboratory:	GEL Laboratories, Charleston, SC
Work Order No.:	185731
Analysis:	Metals, Organics, Inorganics, and Radiochemistry
Validator:	Steve Donivan
Review Date:	June 4, 2007

This validation was performed according to the Environmental Procedures Catalog (STO 6), "Standard Practice for Validation of Laboratory Data," GT-9(P) (2006). The procedure was applied at Level 3, Data Validation. See attached Data Validation Worksheets for supporting documentation on the data review and validation. All analyses were successfully completed. The original request included the determination of nitrate as N. The nitrate determination was cancelled because the samples were received at a temperature out of compliance for sample preservation for nitrate. The samples were prepared and analyzed using accepted procedures based on methods specified by line item code, which are listed in Table 1.

Table 1. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Americium-241	ASP-A-001	HASL-300, Am-05-RC Mod	HASL-300, Am-05-RC Mod
Plutonium Isotopes	ASP-A-001	HASL-300, Pu-11-RC Mod	HASL-300, Pu-11-RC Mod
Uranium Isotopes	ASP-A-001	HASL-300, U-02-RC Mod	HASL-300, U-02-RC Mod

Data Qualifier Summary

Analytical results were qualified as listed in Table 2. Refer to the sections below for an explanation of the data qualifiers applied.

Table 2. Data Qualifier Summary

Sample Number	Location	Analyte(s)	Flag	Reason
185731-001	A4 Pond	Uranium-235	J	Less than 3 times the MDC
185731-002	B5 Pond	Uranium-235	J	Less than 3 times the MDC

Sample Shipping/Receiving

GEL Laboratories in Charleston, South Carolina, received two water samples on May 9, 2007, under air bill number 7923 3899 4412, accompanied by a Chain of Custody (COC) form. The COC form was checked to confirm that all of the samples were listed on the form with sample collection dates and times, and that signatures and dates were present indicating sample relinquishment and receipt. The COC form was complete with no errors or omissions.

Preservation and Holding Times

The sample shipments were received cool and intact with the temperature within the iced coolers of 15°C, which complies with requirements for radiochemistry. All samples were received in the correct container types and had been preserved correctly for the requested analyses with the exception of nitrate. Nitrate was cancelled from the request. All samples were analyzed within the applicable holding times.

Laboratory Instrument Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for all analytes. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear curve. Compliance requirements for continuing calibration checks are established to ensure that the instrument continues to be capable of producing acceptable qualitative and quantitative data. All laboratory instrument calibrations were performed correctly in accordance with the cited methods.

Radiochemical Analysis

Radiochemical results are qualified with a "J" flag (estimated) when the result is greater than the minimum detectable concentration (MDC), but less than three times the MDC. Radiochemical results are qualified with a "U" flag (not detected) when the result is greater than the MDC, but less than the two sigma total propagated uncertainty (TPU).

Alpha Spectrometry
Alpha spectrometry calibrations were performed on May 2, 2007. Instrument background was determined on May, 2007. All daily instrument calibration and background checks met the acceptance criteria, with one exception. Peak resolution and peak identification were acceptable for the sample that was counted on the affected detector, so no data qualification is necessary. The chemical recoveries met the acceptance criteria of 30 to 110% for all samples. The full width at half maximum (FWHM) was reviewed to evaluate the spectral resolution. All FWHM values were below 100, demonstrating acceptable resolution. All internal standard peaks were within 50 KeV of the expected position. The regions-of-interest (ROIs) for analyte peaks were

reviewed. No manual integrations were performed and all ROIs were satisfactory. All results were blank-corrected using data from a blank population.

Method Blanks

Method blanks are analyzed to assess any contamination that may have occurred during sample preparation. All radiochemical method blank results were below the MDC.

Matrix Spike Analysis

Matrix spike (MS) were analyzed for all methods as a measure of method performance in the sample matrix. The MS analyses resulted in acceptable recovery for all analytes.

Laboratory Replicate Analysis

The laboratory replicate sample results demonstrate acceptable laboratory precision. The radiochemical relative error ratio for all laboratory replicate samples was less than three demonstrating acceptable precision.

Laboratory Control Sample

Laboratory control samples (LCSs) were analyzed at the correct frequency to provide information on the accuracy of the analytical method and the overall laboratory performance, including sample preparation. The LCS results were acceptable for all analyses demonstrating acceptable accuracy.

Detection Limits/Dilutions

No dilutions were required for sample analysis. All radiochemical minimum detectable concentrations (MDCs) were calculated using data from a blank population and the following equation.

$$MDC = \frac{3.29 \times S_b \times \sqrt{1 + \frac{T_S}{T_B}}}{K \times T_S} + \frac{3}{K \times T_S}$$

Where:

S_b = Standard deviation of the blank population counts
K = Factor to convert counts per minute to activity concentration
T_b = Count time for blanks
T_s = Count time for sample

The calculation of the MDCs using the equation above was verified.

All MDCs were less than the required MDCs with the exception of americium-241. The required MDC was not achieved because of low chemical recovery. Re-analysis of the samples did not improve the recoveries. There was insufficient sample volume remaining to repeat the analysis.

Completeness and Correctness

Results were reported in the correct units for all analytes requested using contract-required laboratory qualifiers. The radiochemical results calculations were verified by re-calculating the uranium-234 and uranium-238 results for sample locations A4 Pond and B5 Pond.

Electronic Data Deliverable (EDD) File

The EDD file with the complete data arrived on May 23, 2007. The Sample Management System EDD validation module was used to verify that the EDD file was complete and in compliance with requirements. The module compares the contents of the file to the requested analyses to ensure all and only the requested data are delivered. The contents of the EDD were manually examined to verify that the sample results accurately reflect the data contained in the sample data package.

Report Prepared By: _____

Steve Donivan, Laboratory Coordinator

SAMPLE MANAGEMENT SYSTEM

EDD Non-Conformance Report

Report Date: 6/4/2007

EDD File: \\condor\sms\07050877\07050877.txt

EDD Errors:

Record	Error Type	Field	Error Description
			NO ERRORS DETECTED

SAMPLE MANAGEMENT SYSTEM

General Data Validation Report

RIN: 07050877 **Lab Code:** GEN **Validator:** Steve Donivan **Validation Date:** 6/4/2007

Project: Rocky Flats Surface Water **Analysis Type:** ☐ Metals ☐ General Chem ☑ Rad ☐ Organics

# of Samples: 2 **Matrix:** WATER **Requested Analysis Completed:** Yes

Chain of Custody

Present: OK **Signed:** OK **Dated:** OK

Sample

Integrity: OK **Preservation:** OK **Temperature:** OK

Select Quality Parameters

- ☑ Holding Times
- ☑ Detection Limits
- ☐ Field/Trip Blanks
- ☐ Field Duplicates

All analyses were completed within the applicable holding times.

There are 2 detection limit failures.

SAMPLE MANAGEMENT SYSTEM

RIN: 07050877 **Lab Code:** GEN

Non-Compliance Report: Detection Limits

Project: Rocky Flats Surface Water

Validation Date: 6/4/2007

Ticket	Location	Lab Sample ID	Method Code	Lab Method	Analyte Name	Result	Qualifier	Reported Detection Limit	Required Detection Limit	Units
NFP 544	A4 POND	185731001	ASP-A-001	Am-05-RC Modified	Americium-241	-0.0207	U	0.0918	0.03	pCi/L
NFP 545	B5 POND	185731002	ASP-A-001	Am-05-RC Modified	Americium-241	0.00364	U	0.0594	0.03	pCi/L

SAMPLE MANAGEMENT SYSTEM
Radiochemistry Data Validation Worksheet

RIN: 07050877 **Lab Code:** GEN **Date Due:** 5/23/2007

Matrix: Water **Site Code:** RFS02 **Date Completed:** 5/23/2007

Sample	Analyte	Date Analyzed	Result	Flag	Tracer %R	LCS %R	MS %R	Duplicate
A4 Pond	Americium-241	05/17/2007			23.0			
B5 Pond	Americium-241	05/17/2007			36.0			
Duplicate	Americium-241	05/17/2007			30.4			0.50
LCS	Americium-241	05/17/2007			34.4	107.0		
Method Blank	Americium-241	05/17/2007	0.0015	U	38.3			
MS	Americium-241	05/17/2007			30.9		99.0	
A4 Pond	Plutonium-238	05/17/2007			85.0			
B5 Pond	Plutonium-238	05/17/2007			87.0			
Duplicate	Plutonium-238	05/17/2007			71.8			0.10
Method Blank	Plutonium-238	05/17/2007	-0.0007	U	95.7			
Duplicate	Plutonium-239+240	05/17/2007						1.10
LCS	Plutonium-239+240	05/17/2007			91.5	103.0		
MS	Plutonium-239+240	05/17/2007			85.6		101.0	
Method Blank	Plutonium-239+240	05/17/2007	0.0029	U				
Duplicate	Uranium-233+234	05/16/2007			104.0			0.50
Method Blank	Uranium-233+234	05/16/2007	0.0224	U	95.1			
Duplicate	Uranium-235	05/16/2007						0.40
Method Blank	Uranium-235	05/16/2007	0.0123	U				
A4 Pond	Uranium-238	05/16/2007			104.0			
B5 Pond	Uranium-238	05/16/2007			104.0			
Duplicate	Uranium-238	05/16/2007						1.70
LCS	Uranium-238	05/16/2007			96.8	97.0		
MS	Uranium-238	05/16/2007			105.0		101.0	
Method Blank	Uranium-238	05/16/2007	0.0087	U				

Results

$$\frac{sample}{conc} = \frac{\left(\frac{\text{gross}}{\text{counts}} - \frac{\text{bkg}}{\text{counts}}\right) \div \frac{\text{count}}{\text{time (min)}}}{K}$$

K = Decay x ingrowth x efficiency x volume x yield x abundance

	Gross Counts	Bkg Counts	Count Time (min)	Detector Eff (dec)	Yield (dec)	Aliquot	Abund-ance (dec)	Decay (dec)	Ing (dec)	Result (pCi/aliquot)	Result (dpm/aliquot)
A4 Pond: U-234	399	7	1000	0.3746	1.04	0.2	1	1	1	**2.26621956**	5.031007434
A4 Pond: U-238	299	4	1000	0.3746	1.04	0.2	1	1	1	**1.70544585**	3.786089778
B5 Pond: U-234	314	3	1000	0.3746	1.04	0.2	1	1	1	**1.7979446**	3.99143702
B5 Pond: U-238	303	2	1000	0.3746	1.04	0.2	1	1	1	**1.74013288**	3.863094994
							1	1	1		
							1	1	1		
							1	1	1		
							1	1	1		
							1	1	1		
							1	1	1		
							1	1	1		
							1	1	1		
							1	1	1		
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Data Review and Validation Report

General Information

Requisition No. (RIN):	07050890
Sample Event:	May 14, 2007
Site(s):	Rocky Flats, Colorado
Laboratory:	Severn Trent Laboratories, Denver, CO
Work Order No.:	D7E140158
Analysis:	Uranium
Validator:	Steve Donivan
Review Date:	July 3, 2007

This validation was performed according to the *Environmental Procedures Catalog* (STO 6), "Standard Practice for Validation of Laboratory Data," GT-9(P) rev1 (2006). The procedure was applied at Level 3, Data Validation. See attached Data Validation Worksheets for supporting documentation on the data review and validation. All analyses were successfully completed. The samples were prepared and analyzed using accepted procedures based on methods specified by line item code, which are listed in Table 1.

Table 1. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Nitrate/Nitrite as N	WCH-A-022	MCAWW 353.2	MCAWW 353.2

Data Qualifier Summary

None of the results required qualification.

Sample Shipping/Receiving

Severn Trent Laboratories, in Denver, Colorado, received two samples on May 14, 2007 accompanied by a Chain of Custody (COC) form. The COC form was checked to confirm that all of the samples were listed on the form with sample collection dates and times, and that signatures and dates were present indicating sample relinquishment and receipt. The COC form was complete with no errors or omissions.

Preservation and Holding Times

The sample shipment was received cool and intact with the temperature within the cooler of 2.8° C, which complies with requirements. The samples were in the correct container types preserved correctly for the requested analyses.

Laboratory Instrument Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for all analytes. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear curve. Compliance requirements for continuing calibration checks are established to ensure that the instrument continues to be capable of producing acceptable qualitative and quantitative data. All laboratory instrument calibrations were performed correctly in accordance with the cited methods.

Method MCAWW 353.2, Nitrate
The initial calibration for NO_3+NO_2-N was performed using seven calibration standards on May 15, 2007, resulting in calibration curve r^2 values greater than 0.995 and intercepts less than 3 times the MDL. Initial and continuing calibration checks were made at the required frequency resulting in two CCVs that met the acceptance criteria.

Method and Calibration Blanks

Method blanks are analyzed to assess any contamination that may have occurred during sample preparation. Calibration blanks are analyzed to assess instrument contamination prior to and during sample analysis. All initial and continuing calibration blank results were below the method detection limits demonstrating no contamination.

Inductively Coupled Plasma Interference Check Sample Analysis

Inductively coupled plasma interference check samples were analyzed at the required frequency to verify the instrumental interelement and background correction factors. All check sample results met the acceptance criteria.

Matrix Spike Analysis

Matrix spike and matrix spike duplicate (MS/MSD) pairs were analyzed for nitrate as a measure of method performance in the sample matrix. The spike recoveries met the recovery and precision criteria demonstrating acceptable method performance.

Laboratory Replicate Analysis

The relative percent difference values for the MSD sample results and laboratory control sample duplicate results for nitrate were less than 20 percent, indicating acceptable laboratory precision.

Laboratory Control Sample

Laboratory control samples were analyzed at the correct frequency to provide information on the accuracy of the analytical method and the overall laboratory performance, including sample preparation. The results were acceptable indicating acceptable accuracy.

Detection Limits/Dilutions

Samples were diluted in a consistent and acceptable manner when required. The detection limits were acceptable for all analytes.

Completeness

Results were reported in the correct units for all analytes requested using contract-required laboratory qualifiers.

Electronic Data Deliverable File

The electronic data deliverable (EDD) file arrived on May 22, 2007. The Sample Management System EDD validation module was used to verify that the EDD file was complete and in compliance with requirements. The module compares the contents of the file to the requested analyses to ensure all and only the requested data are delivered. The contents of the EDD were manually examined to verify that the sample results accurately reflect the data contained in the sample data package.

Report Prepared By: _____

Laboratory Coordinator

SAMPLE MANAGEMENT SYSTEM

EDD Non-Conformance Report

Report Date: 7/3/2007

EDD File: \\condor\sms\07050890\07050890.txt

EDD Errors:

Record	Error Type	Field	Error Description
			NO ERRORS DETECTED

SAMPLE MANAGEMENT SYSTEM

General Data Validation Report

RIN: 07050890 **Lab Code:** STD **Validator:** Steve Donivan **Validation Date:** 7/3/2007

Project: Rocky Flats Surface Water **Analysis Type:** ☐ Metals ☑ General Chem ☐ Rad ☐ Organics

# of Samples: 2 **Matrix:** Water **Requested Analysis Completed:** Yes

Chain of Custody

Present: OK **Signed:** OK **Dated:** OK

Sample

Integrity: OK **Preservation:** OK **Temperature:** OK

Select Quality Parameters

- ☑ Holding Times
- ☑ Detection Limits
- ☐ Field/Trip Blanks
- ☐ Field Duplicates

All analyses were completed within the applicable holding times.

The reported detection limits are equal to or below contract requirements.

SAMPLE MANAGEMENT SYSTEM

Inorganics Data Validation Worksheet

RIN: 07050890 **Lab Code:** STD **Date Due:** 5/21/2007

Matrix: Water **Site Code:** RFS02 **Date Completed:** 5/21/2007

Analyte	Date Analyzed	CALIBRATION						Method Blank	LCS %R	MS %R	MSD %R	DUP RPD	Serial Dil. %R
		Int.	R^2	ICV	CCV	ICB	CCB						
Nitrate+Nitrite as N	05/15/2007	-0.010	0.9999	OK	OK	OK	OK	OK	95.0	89.0	89.0	0.30	
Nitrate+Nitrite as N	05/15/2007								94.0			1.40	

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Data Review and Validation Report

General Information

Requisition No. (RIN):	07060942
Sample Event:	June 7, 2007
Site(s):	Rocky Flats, Colorado
Laboratory:	Severn Trent Laboratories, Denver, CO
Work Order No.:	D7F070412
Analysis:	Uranium
Validator:	Steve Donivan
Review Date:	July 3, 2007

This validation was performed according to the *Environmental Procedures Catalog* (STO 6), "Standard Practice for Validation of Laboratory Data," GT-9(P) rev1 (2006). The procedure was applied at Level 3, Data Validation. See attached Data Validation Worksheets for supporting documentation on the data review and validation. All analyses were successfully completed. The samples were prepared and analyzed using accepted procedures based on methods specified by line item code, which are listed in Table 1.

Table 1. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Uranium	GJO-01	SW-846 3020A	SW-846 6020

Data Qualifier Summary

None of the results required qualification.

Sample Shipping/Receiving

Severn Trent Laboratories, in Denver, Colorado, received two samples on June 7, 2007 accompanied by a Chain of Custody (COC) form. The COC form was checked to confirm that all of the samples were listed on the form with sample collection dates and times, and that signatures and dates were present indicating sample relinquishment and receipt. The COC form was complete with no errors or omissions.

Preservation and Holding Times

The sample shipment was received intact at ambient, which complies with requirements. The samples were in the correct container types preserved correctly for the requested analyses.

Laboratory Instrument Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for all analytes. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear curve. Compliance requirements for continuing calibration checks are established to ensure that the instrument continues to be capable of producing acceptable qualitative and quantitative data. All laboratory instrument calibrations were performed correctly in accordance with the cited methods.

Method SW-846 6020, Uranium
Calibration for uranium was performed on June 12, 2007 using one calibration standard and a blank. Calibration and laboratory spike standards were prepared from independent sources. Initial and continuing calibration verification (ICV and CCV) checks were made at the required frequency. All calibration checks met the acceptance criteria. Reporting limit verification checks were made at the beginning of the each analytical sequence to verify the linearity of the calibration curve near the practical quantitation limit. All results were within the acceptance range. Mass calibration and resolution verifications were performed at the beginning of each analytical run in accordance with the analytical procedure. Internal standard recoveries were stable and within acceptable ranges.

Method and Calibration Blanks

Method blanks are analyzed to assess any contamination that may have occurred during sample preparation. Calibration blanks are analyzed to assess instrument contamination prior to and during sample analysis. All initial and continuing calibration blank results were below the method detection limits demonstrating no contamination.

Inductively Coupled Plasma Interference Check Sample Analysis

Inductively coupled plasma interference check samples were analyzed at the required frequency to verify the instrumental interelement and background correction factors. All check sample results met the acceptance criteria.

Matrix Spike Analysis

Matrix spike and matrix spike duplicate (MS/MSD) pairs were analyzed for uranium as a measure of method performance in the sample matrix. The spike recoveries met the recovery and precision criteria demonstrating acceptable method performance.

Laboratory Replicate Analysis

The relative percent difference values for the MSD sample results for all analytes were less than 20 percent, indicating acceptable laboratory precision.

Laboratory Control Sample

Laboratory control samples were analyzed at the correct frequency to provide information on the accuracy of the analytical method and the overall laboratory performance, including sample preparation. The results were acceptable indicating acceptable accuracy.

Metals Serial Dilution

Serial dilutions were performed during the uranium analysis to monitor physical or chemical interferences that may exist in the sample matrix. The results were all within the acceptance for all samples.

Detection Limits/Dilutions

Samples were diluted in a consistent and acceptable manner when required. The detection limits were acceptable for all analytes.

Completeness

Results were reported in the correct units for all analytes requested using contract-required laboratory qualifiers.

Electronic Data Deliverable File

The electronic data deliverable (EDD) file arrived on June 15, 2007. The Sample Management System EDD validation module was used to verify that the EDD file was complete and in compliance with requirements. The module compares the contents of the file to the requested analyses to ensure all and only the requested data are delivered. The contents of the EDD were manually examined to verify that the sample results accurately reflect the data contained in the sample data package.

Report Prepared By: _____

Laboratory Coordinator

SAMPLE MANAGEMENT SYSTEM

EDD Non-Conformance Report

Report Date: 7/3/2007

EDD File: \\condor\sms\07060942\07060942.txt

EDD Errors:

Record	Error Type	Field	Error Description
			NO ERRORS DETECTED

SAMPLE MANAGEMENT SYSTEM

General Data Validation Report

RIN: 07060942 **Lab Code:** STD **Validator:** Steve Donivan **Validation Date:** 7/3/2007

Project: Rocky Flats Surface Water **Analysis Type:** ☑ Metals ☐ General Chem ☐ Rad ☐ Organics

# of Samples: 2 **Matrix:** Water **Requested Analysis Completed:** Yes

Chain of Custody

Present: OK **Signed:** OK **Dated:** OK

Sample

Integrity: OK **Preservation:** OK **Temperature:** OK

Select Quality Parameters

- ☑ Holding Times
- ☑ Detection Limits
- ☐ Field/Trip Blanks
- ☐ Field Duplicates

All analyses were completed within the applicable holding times.

The reported detection limits are equal to or below contract requirements.

SAMPLE MANAGEMENT SYSTEM

Metals Data Validation Worksheet

RIN: 07060942 **Lab Code:** STD **Date Due:** 6/14/2007

Matrix: Water **Site Code:** RFS02 **Date Completed:** 6/18/2007

Analyte	Date Analyzed	CALIBRATION						Method Blank	LCS %R	MS %R	MSD %R	Dup. RPD	ICSAB %R	Serial Dil. %R	CRI %R
		Int.	R^2	ICV	CCV	ICB	CCB								
Uranium	06/12/2007			OK	OK	OK	OK	OK	110.0	113.0	107.0	4.7	103.0	1.9	100.0